Notice No.1

Rules and Regulations for the
Classification of Offshore Units
July 2020

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note that corrigenda amends to paragraphs, Tables and Figures are not shown in their entirety.

Issue date: December 2020

Amendments to	Effective date	IACS/IMO implementation (if applicable)
Part 1, Chapter 2, Section 2	1 January 2021	N/A
Part 4, Chapter 1, Section 5	1 January 2021	N/A
Part 4, Chapter 3, Section 7	1 January 2021	N/A
Part 10, Chapter 1, Section 1	1 January 2021	N/A

Part 1, Chapter 2
Classification Regulations

■ *Section 2*
Definitions, character of classification and class notations

2.9 **Descriptive Notes/Supplementary Character**

(Part only shown)

2.9.1 In addition to any class notations, appropriate descriptive qualification notes may be entered on the Class Direct website indicating the type of unit in greater detail than is contained in the class notation, and/or providing additional information about the design and construction, e.g. semi-submersible. A descriptive qualification is not a LR classification notation and is provided solely for information. Examples of descriptive notes are:

Disconnectable unit	Unit can be disconnected from fixed mooring
Floating Clean energy Support Structure	Floating structures at a fixed location for clean energy example: semi subs, TLP's, novel designs

Part 4, Chapter 1
General

■ *Section 5*
Definitions

5.1 **Definitions**

5.1.2 **The Rule length, *L*,** for ship units and other surface type units is the distance, in metres, on the maximum design operating summer load waterline from the forward side of the stem to the after side of the rudder post or to the centre of the rudder stock if there is no rudder post. *L* is to be not less than 96 per cent, and need not be greater than 97 per cent, of the extreme length on the maximum design operating summer load waterline. In ships with unusual stem or stern arrangements the Rule length, *L*, will be specially considered. For nonpropelled Units, *L* is to be 97 per cent of the extreme length on the maximum design operating summer load waterline.

5.1.3 The Rule length for units with unconventional form will be specially considered in relation to the transit or operating waterlines. In units with unconventional form or unusual stem or stern arrangements, the Rule length, *L*, will be specially considered in relation to the transit or operating waterlines.

Part 4, Chapter 3
Structural Design

■ *Section 7*
Corrosion additions

7.4 **Scantling compliance**

Table 3.7.1 Corrosion rate for one side of structural member

Compartment type	Structural member	Corrosion rate t_{c1}, t_{c2} (mm/year)
Ballast water and preload tanks (*see* Note 65)	within 3m below top of tank, *see* Note 1	0,15
	Elsewhere	0,1
Cargo oil tank (*see* Note 3)	within 3m below top of tank, *see* Note 1	0,125
	Bottom of tanks	0,125
	Elsewhere	0,075
Exposed to atmosphere	Weather deck plating	0,1
	Other members	0,075
Exposed to sea water (*see* Notes 65 and 76)	Shell plating	0,075
	Legs of self-elevating units	0,075

Exposed to sea bed and seawater	Legs, footings, mats of self-elevating units	0,2 (*see* Note 8~~7~~)
Fuel and lubricating oil tank (*see* Note 4~~3~~)		0,05
Fresh water tank		0,05
Slop tanks		0,15
Void spaces, *see* Note 2	Spaces not normally accessed, e.g. access only via bolted manhole openings, pipe tunnels, inner surface of stool space common with a dry bulk cargo hold, etc.	0,05
Dry spaces	Internals of machinery spaces, pump room, store rooms, steering gear space, etc	0,05
Hold space bounding membrane liquefied gas tanks	side of hull structure within hold space where there is environmental control such as inerting	0

Note 1 This is only applicable to cargo tanks and ballast tanks with weather deck as the tank top.

Note 2. The corrosion rate on the outer shell plating in way of a pipe tunnel is to be taken as for a water ballast tank.

Note 3. 0,05~~7~~ mm/year is to be added to the plate surface exposed to ballast for the plate boundary between water ballast and heated cargo oil tanks. 0,03 mm/year is to be added to each surface of the web and face plate of a stiffener in a ballast tank and attached to the boundary between water ballast and heated cargo oil tanks. Heated cargo oil tanks are defined as tanks arranged with any form of heating capability.

Note 4. 0,07 mm/year is to be added to the plate surface exposed to ballast for the plate boundary between water ballast and heated fuel oil tanks or lube oil tanks.

Note 5~~4~~. Where a tank is loaded with contents not listed in *Table 3.7.1 Corrosion rate for one side of structural member*, e.g. drilling mud, corrosion rates will be specially considered.

Note 6~~5~~. The corrosion rates indicated assume effective anodes are fitted to the steel boundary.

Note 7~~6~~. Additional corrosion allowance in the splash zone is recommended.

Note 8~~7~~. Additional margins greater than those indicated in the table may be required where the members are subject to high corrosion/wear rates.

Part 10, Chapter 1
General Requirements

■ *Section 1*
General

1.2 **Definitions**

1.2.2 Additional definitions relevant to Pt 10 Ship Units are given below:

T_{sc} = deep load draught, in metres, is the maximum draught on which the scantlings are based

T_{LT} = light load draught, in metres, is the minimum draught on which the scantlings are based

L = Rule length, in metres, as defined in *Pt 4, Ch 1, 5 Definitions*

FE = the fore end, FE, of the rule length L is the perpendicular to the scantling draught waterline at the forward side of the stem, *see Figure 1.2.1 Fore end, aft end and midship*

AE = the aft end, AE, of the rule length L is the perpendicular to the scantling draught waterline at a distance L aft of the fore end, *see Figure 1.2.1 Fore end, aft end and midship*

Midship = the midship is the perpendicular to the scantling draught waterline at a distance 0,5 L aft of fore end, *see Figure 1.2.1 Fore end, aft end and midship*
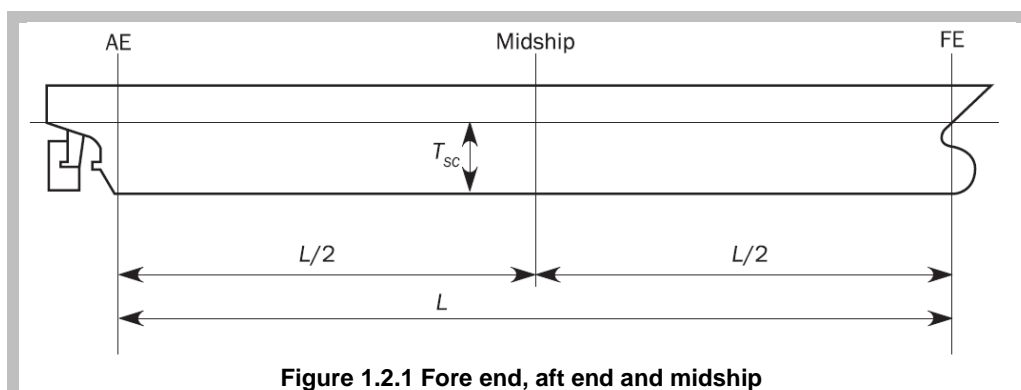

Figure 1.2.1 Fore end, aft end and midship

Part 10, Chapter 2
Loads and Load Combinations

■ *Section 3*
Dynamic load components

3.7 Dynamic hull girder loads

3.7.1 Vertical and horizontal wave bending moments.
(a) The envelope hogging vertical wave bending moment, M_{wv-hog}, and sagging vertical wave bending moment, M_{wv-sag}, and horizontal wave bending moment, M_{wv-h}, are to be taken as:

- Vertical wave bending moment

$$M_{wv-hog} = f_{prob}\, f_{Env-Mwv}\, 0,19\, f_{wv-v}\, C_{wv} L^2 B\, C_b \text{ kNm}$$

$$M_{wv-sag} = -f_{prob}\, f_{Env-Mwv}\, 0,11\, f_{wv-v}\, C_{wv} L^2 B\, (C_b + 0,7) \text{ kNm}$$

- Horizontal wave bending moment

$$M_{wv-h} = f_{prob}\, f_{Env-Mwv-h}\, \left(0,3 + \frac{L}{2000}\right) f_{wv-h}\, C_{wv} L^2 T_{LC}\, C_b \text{ kNm}$$

where

f_{wv-v}, = distribution factors for vertical and horizontal wave bending moments along the vessel length, to be taken
f_{wv-h} as:

       = 0,0 at ~~A.P.~~ AE
       = 1,0 for 0,4L to 0,65L from ~~A.P.~~ AE
       = 0,0 at ~~F.P.~~ FE

3.7.2 Vertical wave shear force.
(a) The envelope positive and negative vertical wave shear forces, Q_{wv-pos} and Q_{wv-neg}, are to be taken as:

$$Q_{wv-pos} = 0,3\, f_{prob}\, f_{Env-Qwv}\, f_{qwv-pos}\, C_{wv} L B\, (C_b + 0,7) \text{ kN}$$

$$Q_{wv-neg} = -0,3\, f_{prob}\, f_{Env-Qwv}\, f_{qwv-neg}\, C_{wv} L B\, (C_b + 0,7) \text{ kN}$$

where

$f_{qwv-pos}$ = distribution factor for positive vertical wave shear force along the vessel length and is to be taken as:

       = 0,0 at ~~A.P.~~ AE

       = $1,59\, \dfrac{C_b}{(C_b + 0,7)}$ for 0,2L to 0,3L from ~~A.P.~~ AE

       = 0,7 for 0,4L to 0,6L from ~~A.P.~~ AE
       = 1,0 for 0,7L to 0,85L from ~~A.P.~~ AE
       = 0,0 at ~~F.P.~~ FE

$f_{qwv-neg}$ = distribution factor for negative vertical wave shear force along the vessel length and is to be taken as:

       = 0,0 at ~~A.P.~~ AE
       = 0,92 for 0,2L to 0,3L from ~~A.P.~~ AE
       = 0,7 for 0,4L to 0,6L from ~~A.P.~~ AE

       = $1,73\, \dfrac{C_b}{(C_b + 0,7)}$ for 0,7L to 0,85L from ~~A.P.~~ AE

   = 0,0 at ~~F.P.~~ FE

intermediate values of $f_{qwv-pos}$ and $f_{qwv-neg}$ are to be obtained by linear interpolation, *see Figure 2.3.2 Positive vertical wave shear force distribution* and *Figure 2.3.3 Negative vertical wave shear force distribution* respectively.

Existing figure 2.3.1 has been deleted and replaced with below.

Figure 2.3.1 Vertical and horizontal wave bending moment distribution for scantling requirements and strength assessment
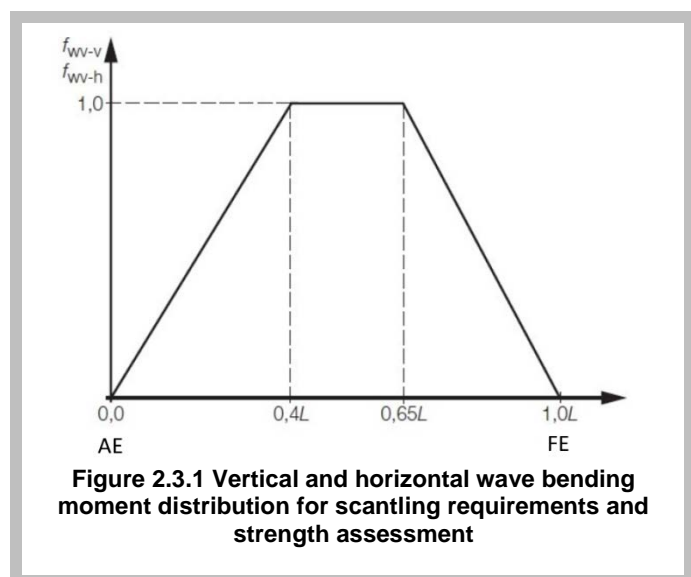
Existing figure 2.3.2 has been deleted and replaced with below.

Figure 2.3.2 Positive vertical wave shear force distribution
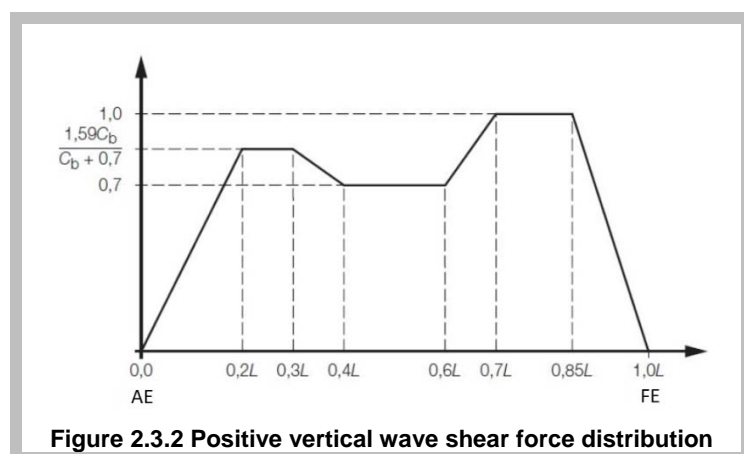
Existing figure 2.3.3 has been deleted and replaced with below.

Figure 2.3.3 Negative vertical wave shear force distribution
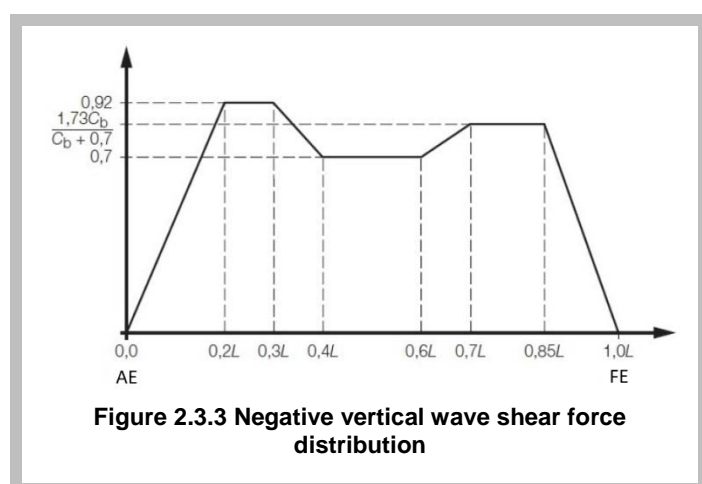
3.8 Dynamic local loads

3.8.2 Dynamic wave pressure.
(a) The envelope dynamic wave pressure, P_{ex-dyn}, is to be taken as the greater of the following:

$$P_1 = 2f_{prob}\,f_{Env-Pex-dyn}\,f_{nl-P1}\left[\left(P_{11} + \frac{135B_{local}}{4(B+75)} - 1,2(T_{LC}-z)\right)f_1 + \frac{135B_{local}}{4(B+75)}f_2\right] kN/m^2$$

$$P_2 = 26f_{prob}\,f_{Env-Pex-dyn}\,f_{nl-P2}\left[\left(\frac{B_{local}}{8}\theta\left(\frac{\pi}{180}\right) + f_T C_b\frac{0,25B_{local}+0,8C_{wv}}{14}\left(0,7+\frac{2z}{T_{LC}}\right)\right)f_1\right.$$
$$\left.+ \left(\frac{B_{local}}{8}\theta\left(\frac{\pi}{180}\right) + f_T C_b\frac{0,25B_{local}}{14}\left(\frac{2z}{T_{LC}}\right)\right)f_2\right] kN/m^2$$

where

B_{local} = local breadth at the waterline, for considered draught, not to be taken less than $0,5B$, in metres

$P_{11} = (3f_{s1}+0,8)C_{wv}$

$f_1 = f_{lng} - f_{lng}f_2 + f_2$

$f_2 = 0,25\left(\frac{4|y|}{B_{local}}-1\right)$ for $|y| < 0,25\,B_{local}$

$= \frac{4|y|}{B_{local}}-1$ for $|y| \geq 0,25\,B_{local}$

$f_{s1} = \dfrac{C_b + \dfrac{1,33}{\sqrt{C_b}}}{}$ at, and aft of, A.P AL

$= C_b$ between $0,2L$ and $0,7L$ from A.P AL

$= \dfrac{C_b + \dfrac{1,33}{C_b}}{}$ at, and forward of, F.P. FE

intermediate values to be obtained by linear interpolation

f_{lng} = 1,0 at, and aft of, A.P AE

= 0,7 for $0,2L$ to $0,7L$ from A.P AE

= 1,0 at, and forward of, F.P. FE

intermediate values to be obtained by linear interpolation

3.8.3 Green sea load.
(a) The envelope green sea load on the weather deck, P_{wdk}, is to be taken as the greater of the following:

$$P_{wdk} = f_{1-dk}(f_{op}P_{1-WL} - 10z_{dk-T}) \ kN/m^2$$

$$P_{wdk} = 0,8f_{2-dk}(P_{2-WL} - 10z_{dk-T}) \ kN/m^2$$

$$P_{wdk} = 34,3 \ kN/m^2$$

where

$$f_{1-dk} = 0,8 + \frac{L}{750}$$

$$f_{2-dk} = 0,5 + \frac{|y|}{B_{wdk}}$$

f_{op} = 1,0 at, and forward of, $0,2L$ from A.P AE

= 0,8 at, and aft of, A.P AE

intermediate values to be obtained by linear interpolation